

## LIST OF CLAIMS / AMENDMENTS

Please amend claims 1-6, 8-9, and 11-32 as shown herein.

Claims 1-32 are pending and are listed following:

1. (currently amended) A method, comprising:

receiving an input;

~~determining if the input can be processed by an optimized filter engine and;~~

~~if so, directing the input to the optimized filter engine for processing;~~

~~if the input cannot be processed by the optimized filter engine, directing the input to a generalized filter engine for processing;~~

~~determining whether the input can be processed by a selective sub-engine which supports only a subset of a query language; and~~

~~if the determining indicates that the input can be processed by the selective sub-engine, then directing the input to the selective sub-engine for processing in less time than would be required by a general sub-engine which fully supports the query language;~~

~~if the determining indicates that the input cannot be processed by the selective sub-engine, then directing the input to the general sub-engine for processing; and~~

processing the input to derive a result;

~~wherein the generalized filter engine is configured to handle terms of a language to which the input conforms and the optimized filter engine is configured to process a subset of the terms of the language.~~

1           **2. (currently amended)**   The method as recited in claim 1,  
2 wherein:

3           ~~the optimized filter engine further comprises an optimized filter sub-engine;~~  
4           ~~the generalized filter engine further comprises a generalized filter sub-~~  
5 engine; and

6           the ~~optimized filter sub-engine~~ selective sub-engine and the ~~generalized~~  
7 ~~filter general~~ sub-engine are encompassed by a single filter engine.

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9           **3. (currently amended)**   The method as recited in claim 1,  
10 wherein the determining step further comprises recognizing whether or not the  
11 input conforms to a grammar of the ~~optimized filter engine~~ selective sub-engine.

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13           **4. (currently amended)**   The method as recited in claim 1,  
14 wherein the input language ~~further~~ comprises a query language based on  
15 eXtensible Markup Language (XML).

1           5.     (currently amended)     The method as recited in claim 1,  
2 wherein the ~~optimized filter engine is a first optimized filter engine and selective~~  
3 ~~sub-engine includes a first sub-engine which supports only a first unique subset of~~  
4 ~~the query language and a second sub-engine which supports only a second unique~~  
5 ~~subset of the query language, and wherein the method further comprises:~~

6           ~~if the input cannot be processed by the first optimized filter engine;~~  
7 ~~determining if the input can be processed by a second optimized filter engine;~~

8           ~~directing the input to the second optimized filter engine if the second~~  
9 ~~optimized filter engine can process the input;~~

10           ~~directing the input to the generalized filter engine for processing if the~~  
11 ~~second optimized filter engine cannot process the input; and~~

12           ~~wherein the second optimized filter engine is configured to handle a subset~~  
13 ~~of the input language, the subset of the second optimized filter engine is different~~  
14 ~~than the subset of the first optimized filter engine.~~

15           determining whether the input can be processed by the first sub-engine or  
16 by the second sub-engine;

17                 if the determining indicates that the input can be processed by the  
18 first sub-engine, then directing the input to the first sub-engine for  
19 processing;

20                 if the determining indicates that the input can be processed by the  
21 second sub-engine, then directing the input to the second sub-engine for  
22 processing; and

1           if the determining indicates that the input cannot be processed by  
2           the first sub-engine, and that the input cannot be processed by the  
3           second sub-engine, then directing the input to the general sub-engine for  
4           processing.

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6           **6. (currently amended)**       The method as recited in claim 1, further  
7           comprising:

8           parsing the input to determine if ~~multiple discrete~~ different sub-expressions  
9           can be identified;

10          if the different sub-expressions are identified, determining if a first sub-  
11          expression can be processed by the ~~optimized filter engine~~ selective sub-engine;

12          if the first sub-expression can be processed by the ~~optimized filter engine~~  
13          selective sub-engine, then directing the first sub-expression to the ~~optimized filter~~  
14          ~~engine~~ selective sub-engine for processing;

15          if the first sub-expression cannot be processed by the ~~optimized filter~~  
16          ~~engine~~ selective sub-engine, directing the first sub-expression to the ~~optimized~~  
17          ~~filter engine~~ general sub-engine for processing;

18          if a second sub-expression can be processed by the ~~optimized filter engine~~  
19          selective sub-engine, directing the second sub-expression to the ~~optimized filter~~  
20          ~~engine~~ selective sub-engine for processing; and

21          if the second sub-expression cannot be processed by the ~~optimized filter~~  
22          ~~engine~~ selective sub-engine, directing the second sub-expression to the ~~optimized~~  
23          ~~filter engine~~ general sub-engine for processing.  
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1        7.     (original)     The method as recited in claim 6, further comprising:  
2        obtaining a result of the processing of the first sub-expression; and  
3        processing the second sub-expression only if the result of the first sub-  
4        expression is true.

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6        8.     (currently amended)     A filter engine, comprising:  
7        at least one ~~optimized matcher~~ selective sub-engine configured to accept an  
8        input and process the input against a filter table associated with the ~~optimized~~  
9        ~~matcher selective sub-engine~~, wherein the selective sub-engine is configured to  
10       process only a subset of terms of an input language;

11        a ~~generalized matcher~~ general sub-engine configured to accept an input and  
12        process the input against a filter table associated with the ~~generalized matcher~~  
13       general sub-engine, wherein the general sub-engine is configured to process only  
14       all terms of the input language; and

15        an analyzer configured to determine whether the input can be processed by  
16        the ~~optimized matcher~~ selective sub-engine and, if so, directing the input to the  
17       ~~optimized matcher selective sub-engine~~ for processing or, if not, directing the  
18       input to the ~~generalized matcher~~ general sub-engine for processing; and

19        wherein:

20        the ~~generalized matcher is configured to process all terms of an input~~  
21       language; and

22        the ~~optimized matcher is configured to process only a subset of the terms of~~  
23       the input language.

1           **9. (currently amended)**     The filter engine as recited in claim 8,  
2 wherein the analyzer is further configured to analyze a new filter added to the filter  
3 engine and to determine an appropriate matcher with which to ~~associated~~ associate  
4 the new filter.

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6           **10. (original)**     The filter engine as recited in claim 8, wherein the  
7 input language is XPath.

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9           **11. (currently amended)**     The filter engine as recited in claim 8,  
10 wherein the analyzer is further configured to determine whether the ~~optimized~~  
11 ~~matcher~~ selective sub-engine can process the input by comparing the input to a  
12 grammar associated with the ~~optimized-matcher~~ selective sub-engine and  
13 determining whether the input consists of terms that are compatible with the  
14 grammar.

12. (currently amended) The filter engine as recited in claim 8,  
further comprising a sub-expression module that is configured to:

determine whether ~~an input~~ the input consists of ~~distinct~~ different sub-expressions;

if the input consists of ~~distinct~~ different sub-expressions, directing each ~~sub-expression~~ of the different sub-expressions contained in the input to the analyzer; and

wherein the analyzer is further configured to determine whether a ~~sub-expression~~ each of the different sub-expressions can be processed by the ~~optimized~~ efficient matcher and to direct each ~~sub-expression~~ of the different sub-expressions to an appropriate matcher for processing.

13. (currently amended) The filter engine as recited in claim 12,  
wherein a first sub-expression may be directed to the ~~optimized matcher~~ selective sub-engine and a second sub-expression may be directed to the ~~generalized matcher~~ general sub-engine.

14. (currently amended) The filter engine as recited in claim 8,  
wherein the at least one ~~optimized matcher~~ selective sub-engine further comprises:

a first ~~optimized matcher~~ selective sub-engine configured to process inputs that conform to a first subset of the input language;

a second ~~optimized matcher~~ selective sub-engine configured to process inputs that conform to a second subset of the input language; and

wherein the first subset and the second subset are unique subsets of the input language.

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2       **15. (currently amended)**     One or more computer-readable storage  
3 media containing computer-executable instructions that, when executed on a  
4 computer, perform the following steps:

5       determining an appropriate ~~matcher~~ sub-engine to which an input message  
6 should be directed for processing against a set of queries;

7       processing the input message in a ~~first filter engine~~ selective sub-engine if  
8 the ~~first filter engine~~ selective sub-engine comprises a grammar that supports  
9 processing of the input message;

10       processing the input message in a ~~second filter engine~~ general sub-engine if  
11 the ~~first filter engine~~ selective sub-engine grammar does not support processing of  
12 the input message; and

13       wherein:

14       the input message is in accordance with a query language;

15       the ~~first filter engine~~ selective sub-engine supports a subset of the query  
16 language; and

17       the ~~second filter engine~~ general sub-engine supports the entire query  
18 language.

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20       **16. (currently amended)**     The one or more computer-readable  
21 storage media as recited in claim 15, further comprising the step of accepting input  
22 messages for both ~~filter engines~~ the selective sub-engine and the general sub-  
23 engine by way of a single input means so that an input message sending  
24 application does not have to distinguish between the ~~first filter engine~~ and the  
25 ~~second filter engine~~ the selective sub-engine and the general sub-engine.



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2       **17. (currently amended)**     The one or more computer-readable  
3 storage media as recited in claim 15, wherein the query language is XPath.

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5       **18. (currently amended)**     The one or more computer-readable  
6 storage media as recited in claim 15, wherein the query language is an XML query  
7 language.

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9       **19. (currently amended)**     The one or more computer-readable  
10 storage media as recited in claim 15, further comprising the steps of:

11       analyzing the input message prior to determining which ~~filter-engine~~ sub-  
12 engine will process the input message, and to determine if the input message can  
13 be parsed into two or more sub-expressions;

14       for each sub-expression identified, determining an appropriate ~~matcher~~ sub-  
15 engine that can process the sub-expression; and

16       directing each sub-expression to the appropriate ~~matcher~~ sub-engine for  
17 processing.

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19       **20. (currently amended)**     The one or more computer-readable  
20 storage media as recited in claim 19, further comprising the step of deriving a final  
21 result of the input message processing from at least one result of the sub-  
22 expression processing.

1           **21. (currently amended)**   The one or more computer-readable  
2 storage media as recited in claim 19, further comprising the steps of:  
3           determining if a first sub-expression evaluates true;  
4           proceeding with processing of subsequent sub-expressions if the first sub-  
5 expression is true; and  
6           foregoing processing of subsequent sub-expressions if the first sub-  
7 expression is false.

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9           **22. (currently amended)**   The one or more computer-readable  
10 storage media as recited in claim 15, wherein each ~~matcher~~ sub-engine includes a  
11 set of queries against which input messages directed to the respective ~~matchers~~  
12 sub-engine are tried, and wherein each set of queries is unique.

1           **23. (currently amended)**   A   message   processing   system,  
2 comprising:

3           means for receiving a message;

4           ~~an optimized filter processor~~ a selective sub-engine which supports only a  
5 subset of a message language;

6           ~~a general filter processor~~ a general sub-engine which supports all of the  
7 message language;

8           analyzing means for analyzing the message to determine if the optimized  
9 filter processor selective sub-engine is configured to process the message;

10          distribution means for distributing the message to the ~~optimized filter~~  
11 ~~processor selective sub-engine~~ if the ~~optimized filter processor selective sub-~~  
12 engine can process the message or to the ~~general filter processor~~ general sub-  
13 engine if the ~~optimized filter processor~~ selective sub-engine cannot process the  
14 message.

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16          **24. (currently amended)**   The message processing system as  
17 recited in claim 23, wherein:

18          the ~~optimized filter processor selective sub-engine~~ further comprises a first  
19 set of queries against which ~~a message directed to the optimized filter processor is~~  
20 compared the message can be compared;

21          the ~~general filter processor general sub-engine~~ further comprises a second  
22 set of queries against which ~~a message directed to the general filter processor is~~  
23 compared the message can be compared; and

24          the first set of queries contains fewer queries than the second set of queries.  
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1           **25. (currently amended)**   The message processing system as  
2 recited in claim 23, wherein:

3           the message conforms to an XML query language;

4           the ~~general filter processor~~ general sub-engine is configured to support the  
5 entire XML query language; and

6           the ~~optimized filter processor~~ selective sub-engine is configured to support  
7 a subset of the XML query language.

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9           **26. (currently amended)**   The message processing system as  
10 recited in claim 25, wherein the XML query language is XPath.

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12           **27. (currently amended)**   The message processing system as  
13 recited in claim 23, wherein the ~~optimized filter processor~~ selective sub-engine  
14 further comprises means for optimizing increasing message processing ~~over the set~~  
15 ~~of queries included in the optimized filter processor~~ performance includes  
16 combining individual filters for use in a single procedure.

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18           **28. (currently amended)**   The message processing system as  
19 recited in claim 27, wherein the means for ~~optimizing~~ increasing message  
20 processing performance further comprises a hash function.

1           **29. (currently amended)**   The message processing system as  
2 recited in claim 23, wherein: ~~the optimized filter processor is a first filter processor~~  
3 the selective sub-engine includes a first selective sub-engine which supports only a  
4 first unique subset of the query language and a second selective sub-engine which  
5 supports only a second unique subset of the query language;

6           ~~the message processing system further comprises a second optimized filter~~  
7 ~~processor to which messages may be directed, the second optimized filter~~  
8 ~~processor supporting a unique subset of the query language; and~~

9           the distribution means is further configured to direct the message to the  
10 ~~second optimized filter processor~~ second selective sub-engine if the ~~first optimized~~  
11 ~~filter processor~~ first selective sub-engine cannot process the message but the  
12 ~~second optimized filter processor~~ second selective sub-engine can process the  
13 message.  
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15           **30. (currently amended)**   The message processing system as  
16 recited in claim 23, further comprising means for parsing the message into  
17 constituent sub-expressions, and wherein the analyzing means is further configured  
18 to process individual sub-expression as an individual message and to evaluate sub-  
19 expression processing results to derive a result corresponding to the message.  
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21           **31. (currently amended)**   The message processing system as  
22 recited in claim 23, wherein the message is a sub-expression of a parent message.  
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1       **32. (currently amended)**   The message processing system as  
2 recited in claim 23, further comprising means for determining whether a filter in  
3 the system is associated with ~~the generalized filter processor or the optimized filter~~  
4 ~~processor~~ the general sub-engine or with the selective sub-engine.  
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